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DISEASES OF THE CHEST

(A MONTHLY PUBLICATION)

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"The most important factor in diagnosis in the majority of cases of pulmonary tuberculosis is keeping the disease in mind."

Lawrason Brown, M. D.

Editorial Comment

A Proclamation THE GOVERNOR of Texas has set aside, by proclamation, the month of April as *"Fight Tuberculosis Month"* in Texas, declaring that the protection of the people is generally recognized as one of the fundamental concerns of a government dedicated to the "general welfare". He further states, "the dread disease of tuberculosis each year takes the toll of some of our finest citizens, young and old, rich and poor. Governor Allred's proclamation was made since the Texas Tuberculosis Association will sponsor an educational campaign during April, calling attention to the need of protecting children of high school age against the ever present danger of the great white plague.

Governor Allred urged that every man, woman and child, of the state, learn the basic facts about this disease, and its prevention, especially in young people in order that it may in time be eradicated from within our borders. It is encouraging to have the Governor of a great state assist in such a manner. We have stated on other occasions, in these columns, that the control of tuberculosis should be carried out by the Public Health Principals as applied to other infectious and contagious diseases, namely, by the segregation of the open case of pulmonary tuberculosis. When this principal has been carried out the protection of not only the young, but of the entire population will have been carried out. Educational campaigns are of great value, we can teach the child better methods of living and self protection for his general health, but education will scarcely protect him from the dangers of infection, while we permit open cases of pulmonary tuberculosis to spread the disease. C. M. H.

Military Surgeons' Exhibit THE ASSOCIATION of Military Surgeons of the United States announces the appointment of Mr. Robert Lewin as Director of its convention exhibits.

Mr. Lewin has very successfully directed the commercial exhibits of the Association of Railway Surgeons and the American Association of Orthopaedic Surgeons for a number of years. This year he is also directing the commercial exhibit held in conjunction with the International Fever Therapy Conference at the Waldorf-Astoria, March 29th, 30th and 31st, 1937.

The commercial exhibits of the Association of Military Surgeons have been creating more attention each year and the exhibitors have found this to be a highly profitable meeting.

Anyone desiring information in connection with the Military Surgeons 1937 convention to be held at Los Angeles, October 14th to 16th, the American Association of Orthopaedic Surgeons to be held at the Biltmore Hotel, Los Angeles, January 15th to 19th, the American As-

sociation of Railway Surgeons meeting to be held September 21st to 22nd at the Palmer House in Chicago, or the International Fever Therapy Conference, as above mentioned, should address:

Mr. Robert Lewin, 505 N. Michigan Avenue, Chicago, Ill. P. J. M.

Medication in Pulmonary Tuberculosis

IN THE application of therapeutic measures in tuberculosis there is frequently a tendency upon the part of most all of us to become too narrow. We are too prone to become satisfied with one line of treatment which we apply as a routine to all patients without a proper study of the individual.

There can be no question that some form of surgical treatment, preferably artificial pneumothorax if its application is possible, is indicated in a good majority of tuberculous individuals, and, indeed, is the treatment *par excellence,* but even where it can be successfully administered is it fair to the patient to fail to apply other measures which should add to his chance of recovery, or at least encourage a more rapid improvement in his general condition?

There is a pretty generally accepted opinion that in almost all patients suffering with tuberculosis there exists a low blood calcium content, and it is just as generally believed that a surplus of calcium is needed in the proper healing of tuberculous lesions. If such is true, it is our feeling that in all cases, even though successful compression has been obtained, calcium should be administered for a time, the length of time depending, of course, upon the individual patient and the rapidity with which he responds to treatment.

In most every tuberculous patient there is a certain amount of secondary anemia. The extent of this should be determined, of course, by proper examination of the blood and when it is at all marked this patient should have Iron and Arsenic, just as a patient with secondary anemia from any other condition. In most cases it should be given intravenously, as is true with the calcium, because the results have been found to be much more satisfactory when it is given that way.

In many patients the general condition of the flesh and strength is below par and these should be built up as rapidly as possible. A study of the vitamins should be made in these cases and such treatment applied as would seem most indicated.

Cod Liver Oil is now supplied in many ways and is still one of the best remedies as a general builder in any condition where the patient is below par. It is none the less so in tuberculosis. We admit that many cannot tolerate Cod Liver Oil in its natural form but in its concentrated form, prepared as we can now obtain it, some preparation will be found which almost any patient can tolerate and it should be administered when possible. Haliver Oil and Viosterol can be used as a substitute for Cod Liver Oil when it is not well tolerated. Malt preparations and many others, with which most physicians are familiar, should be used when indicated.

Where the patient's appetite is poor, the bitter tonics are indicated in tuberculosis just as in any other condition and should certainly be used.

Our point in making these remarks is to emphasize that we should not depend too much upon one line of treatment, even in patients who are getting good results from the so-called "rest treatment". These results would probably be more rapid if some of these other lines of treatment were added. Let us not become too narrow in the treatment of this disease.

R. B. H., SR.

Tuberculosis Editors' Association Elects Officers

THE FOLLOWING were elected to office for the year of 1937 by the Associated Editors of Tuberculosis Publications: President, Murray Kornfeld, El Paso, Texas. Managing Editor, "*Diseases of the Chest*"; First Vice-President, Roy W. Henson,

State Sanatorium, Texas, Editor, *"The Chaser"*; Second Vice-President, Myrtle Rockwood, Perrysburg, New York, Editor, *"Grit-Grin"*; Secretary-Treasurer, Mrs. W. M. Harman, Verona, New Jersey, Editor, *"The Buzzer"*; Board of Directors: Lorne L. Clemes, Howell, Michigan, Editor, *"The Lamp Post"*; Carey Holbrook, Albuquerque, New Mexico, Editor, *"Health City Sun"*; Suye Narita, Mt. McGregor, New York, Editor, *"The Optomist"*; William L. Sullivan, Howell, Michigan, Editor, *"The Lamp Post"*; and William H. Fitzimmons, Hamilton, Ontario, Canada, Editor, *"The Santowner"*.

Due to ill health, Mrs. Harman will not be able to assume office and Suye Narita, Mt. McGregor, New York, will serve as the Secretary-Treasurer.

It is the purpose of this organization to be of mutual assistance in obtaining and publishing material and data on tuberculosis and wherever possible to raise the standards of the member publications.

Diseases of the Chest is happy to be a member of this association and our Editorial Board appreciates the honor bestowed upon our Managing Editor.

C. M. H.

Hoarseness HOARSENESS is a condition found in various conditions affecting the proper functioning of the vocal cords. The condition should always be regarded seriously. It is our duty to ascertain why hoarseness is present and to determine the best methods for the removal of the cause. If we find remote and constitutional causes underlying the local laryngeal condition, we will exhaust, in many instances, all diagnostic agencies at our command, such as Wassermann tests, physical examination of the chest, x-ray study of the chest and larynx, a careful study of the heart, keeping in mind the possibility of hypertrophy, aneurism, enlarged mediastinal glands, tumors and foreign bodies. X-ray examination of the larynx may reveal the presence of unsuspected foreign bodies. It should be remembered that the finding of tuberculous lesions in the lungs does not preclude the possibility of the patient having syphilis.

Although many cases of hoarseness may be due to the presence of laryngeal tumors, malignant or benign, to syphilis, tuberculosis and paralysis of different laryngeal muscles, it is not to be assumed that there is no such thing as a simple acute or chronic catarrhal laryngitis. In the case of acute laryngitis, the diagnosis is simple, because of its short duration. In the cases of chronic hoarseness, the underlying causes should be searched for, not forgetting, that chronic hoarseness is one of the early signs of a tuberculous involvement.

C. M. H.

Internal Conference on Fever Therapy IN CONJUNCTION with the International Conference on Fever Therapy to be held at the Waldorf-Astoria Hotel on March 29th, 30th, 31st, 1937, there will be a scientific and commercial exhibit staged.

The clinics will be held at the College of Physicians and Surgeons, Columbia University, New York City.

A large attendance of fever therapists from all over the world is expected. A very interesting and instructive program has been arranged and all of those who plan to attend the conference are urged to register promptly with the general Secretary, Dr. William Bierman, 471 Park Avenue, New York City. The registration fee is $15.00.

P. J. M.

ERRATA

FEBRUARY, 1937 issue; *Standardization of Tuberculosis Case Finding Procedure in Schools,* by Charles I. Silk; page 13, line 15; "Fourth, that the reactor may lead to the discovery of familial or other sources of infection."

Medical Economics

BY
LEROY S. PETERS, M.D.
Albuquerque, N. M.

THE ECONOMIC situation that worries the medical profession today has worried the same profession since the dawn of civilization. The Greeks had a word for it, and took steps in the fifth century B. C. to correct what they considered an intolerable condition. The country was over-run by itinerant physicians who wandered from town to town caring for the sick. As soon as the ills of a given village were overcome, the doctor moved on, leaving the community without medical care. The wise ones of the country took up a purse and paid the medical man a salary to stay put. Thus was socialized medicine born and it has lived with us ever since.

Rome had no doctors, but cured the ills of the populace by magic or religion. The one worked as successfully as the other, until the Greek medics filled up the country by the second century B. C. and allowed the victims to die without benefit of clergy.

The Christians, however, built charity hospitals to care for the unfortunate. These were followed by the Guilds, whose institutions are preserved to this day, and led to our present sickness insurance, both private and state.

In 1818 Germany passed lleglislation establishing socialized medicine by a tax on the rich;—the poor escaped. The physician was paid a salary for his work and allowed a private practice. In 1883 this same country passed a bill for compulsory health insurance. This type of legislation was followed by Austria in 1888 and by Hungary in 1891. By 1900 all the countries of Europe including England had some form of health insurance.

Russia is the only country in the world today in which state medicine exists. There the doctor is on salary, is paid by the state, and is under government supervision. It would be interesting to see how the entire economic experiment would ultimately work out, but watching from the side lines, one feels that the Fascist countries will force the Soviet union into a defensive war and ruin the attempts so far made to establish the first socialist state in the present-day world.

America is far behind the continent in any attempt to solve the medical economic situation. This is no doubt due to the fact that when our democracy was born on the Atlantic seaboard eighty per cent of the people owned their means of livelihood, and the other twenty per cent worked for this eighty. The farmer, the blacksmith, the watchmaker, the baker and candlestick maker — all had their means of security. The apprentices who worked for them learned the trade and established a place of their own. The country doctor was a part of all this economic hook-up. If he didn't get paid in money, he received its equivalent and was able to enjoy a rich life and do his part for humanity. This Utopia went on in much the same way until 1830 and from that period to 1870, as the industrial age made its fangs felt in man's economic life, living conditions were becoming more and more unstable for the average individual. Now twenty per cent of the people own all the wealth and the other eighty per cent are working for them on salary or wages. Not one of the eighty per cent owns the means of livelihood. In other words, they couldn't live on the property they own—because for all practical purposes they are without property.

The medical profession faces today the same situation that the captains of industry find confronting them. In fact, organized medicine bears the same relationship to the economic situation as does organized industry. And neither seem to see the handwriting on the wall.

Whenever a depression or a crisis occurs in the enonomic set-up, literature is filled with solutions for the vexing problems. Economists, both lay and medical, fight for the privilege of curing the ills both of the flesh and of the body politic. If someone steps slightly to the left, he is immediately put down as a Communist, a Red, a Bolshevik, or what not. The term means little. It is a title conferred on him who does not believe that this is the best possible of worlds.

Organized medicine as represented by the American Medical Association stands for the capitalist in medicine. The men in the higher income group want no change—they are satisfied with things as they are. But here again we must face the fact that the higher income brackets represent only the minority of the practitioners of medicine. The average income before the crash in 1929 of one-third of the medical men of this country was less than $3,000 yearly, and of one-half, less than $3,800 yearly. These small-income doctors are already under socialized medicine, such as salaries or contract practice, or are starving in private practice.

Naturally this group, like the salaried or wage-earning group in industry, are glad of any change that spells security for them. And the voice of the majority in any situation spells change whether you want it or not.

The attitude of the American Medical Association—opposition to all attempted reforms with no constructive thought in lieu of these reforms—only adds fuel to the flames and gets us nowhere.

Even the American College of Physicians opposes this attitude by editorial comment in the *Annals of Internal Medicine*, and the American College of Surgeons passed resolutions resenting such interference, but rescinded their action after pressure was brought to bear, stating that hereafter the economic affairs of organized medicine would be left to the American Medical Association. This *laissez faire* "it can't happen here" attitude will bring the house of cards tumbling on our heads and usher in socialized medicine, or worse, state medicine, in a capitalist society during the life-time of the present generation.

When a patient calls his doctor he is paying for service the doctor has to sell. The doctor does or should give the patient something for his money, and the patient should expect to pay for this something. It is a business arrangement which should be beneficial to both and both should have a voice in the arrangement. This, however, is not the attitude of organized medicine. The doctor and the doctor alone should be judge and jury and the patient made to like it whether or not.

The world is full of large numbers who cannot budget for medical care. They can budget for groceries, clothes, rent, and all fixed expenditures, but disease is an unknown quantity. When it stalks into the home this group either has no medical care or contracts a large debt which it is unable ever to pay. The doctor and the patient both lose and both suffer because of the attitude of organized medicine which blocks a solution.

The present chaos is the result of the industrial age. Each decade increases the cost of living; the luxuries of yesterday are the necessities of today, nor have the doctors neglected to add to the cost of medical care.

In my early years, a mother could give birth to a baby in her own home. Now she must be rushed to the obstetrical ward of some hospital. There the nurse watches the course of child-birth and calls the doctor in time to tie the cord and usher a new soul into this chaotic world. The medical attendant spends fifteen minutes where he used to spend the night. Child-birth has been made easy for the doctor by added expense to the patient. At one time a child could be born for ten to fifteen dollars, where now it costs from one hundred to one hundred fifty, to produce no better offspring. In fact, one great obstetrician made the statement that chances of infection were greater in the general hospital than in the home.

(Continued to page 30)

Office Treatment of Pulmonary Tuberculosis

BY
A. S. CANTOR, M.D.
Scranton, Pennsylvania

THE PATIENT who comes to the office with symptoms suggestive of some disease of the chest must have a complete and careful study. Unless the history is carefully elicited and a complete examination made, with such laboratory studies as the history and examination may suggest, some important condition, the cause of the complaints, or an important contributory factor, may be overlooked.

It is the plan of this office to have every patient, at his or her first visit, have a very careful and complete history taken before physical examination is begun. If this history suggests blood chemistry or other laboratory study, this is done before the patient is seen by me. In addition, our routine laboratory examinations consist of complete blood counts and urinalysis. The height, weight, temperature, pulse, respirations, vital capacity and blood pressure are recorded. The examination is begun in a systematic manner. First, a preliminary neurological. If this is done every time, inequality of pupils, abnormal reflexes and abnormal eye ground findings will not be missed. Examination of the nose and sinuses, if indicated, is then made. Chronic cough is frequently due to infection in the paranasal sinuses. A chronic bronchosinusitis has frequently been mislabeled tuberculosis and I have had such cases referred to me for induction of artificial pneumo-thorax. Careful study proved the patient entirely free of tuberculous infection. Examination of the mouth requires careful study of the teeth, gums, tonsils and the lymphoid tissue in Waldeyer's ring. Lymphoid tissue in the lateral walls of the posterior pharynx, when inflamed, gives rise to temperature and non-productive cough. The thyroid should be carefully palpated and at the same time the pulse rate, the presence or absence of tremors and eye symptoms noted. A basal metabolic rate may clear up the diagnosis. Many a case of hyperthyroidism has gone under the name of pulmonary tuberculosis or neurosis. The same is true of the occasional simple thyroiditis, which must be kept in mind. While one is observing the extended hands for tremors, he notes the absence or presence of clubbing of the fingers, cyanosis or other signs in the fingernails. A study of the glandular system and physical examination of the chest, completely stripped, is begun. Measurements including the antero-posterior diameter and the width of the chest, help give a written picture of the shape of the chest. The posterior part of the chest is first examined with particular attention to the position of the spine and any abnormalities; to the absence or presence of tenderness. The question of undue prominence of the transverse process of the cervical vertebra or cervical rib must be kept in mind to avoid pitfalls in diagnosis. In addition to tenderness (Petruschky sign), the vertebra can be percussed for impairment (Koranyi sign). D'Espine's sign can then be elicited; the size of the Kronig fields; the question of lagging; the question of impairment to percussion and the movement of the diaphragms. Auscultation must be done in a quiet room. After careful listening, it is wise to have the patient cough after a full expiration and then take a deep breath. Rales otherwise not heard may now be brought to light. Sounds due to friction of stethoscope on a hairy chest must not be mistaken for rales. The right and left axilla are examined in a similar manner, then the anterior portion of the chest. The breasts should be carefully palpated for possible lumps or early malignancy. The heart should be examined. The cough, hemoptysis, and easy fatigue of some patients with mitral stenosis has been mistaken for tuberculosis. The mitral murmur is

sometimes difficult to obtain except by changes of position or exercise. A roughened first sound at the apex, an accentuated second pulmonic or mitral configuration should put one wise. The chest is not completely studied until careful fluoroscopy has been made in a dark room. Where this is not conclusive, carefully taken stereoscopic films should be made. The abdomen, rectum, and genital organs may now be studied.

This careful examination will frequently bring to light, conditions that otherwise would be overlooked. The patient, impressed by the care and pain you have taken, is in a psychological state to cooperate with your line of treatment. This is essential in chronic chest cases. A complete inclusive diagnosis should be made at the first visit, or where this is not possible, temperature records, sputum, sedimentation tests, or other laboratory studies should be carried out so that an accurate, all-inclusive diagnosis can be made. Then one must outline the treatment. Whenever possible, give patients written directions. It is surprising how much more carefully patients will carry out orders given in this manner, than when the perfunctory method of telling them a few things to do and a prescription to get filled is carried out.

It is sometimes stated that when in doubt, the diagnosis of pulmonary tuberculosis should be made and the patient treated as an element of safety. This is not wise. In our imperfect social order a wrong diagnosis places a heavy burden on the patient. Such an individual may have difficulty in associating with his friends or in obtaining proper employment. Some individuals develop phthisophobia which is almost as bad as the disease itself. One should be more than moderately certain when a diagnosis of tuberculosis is made that the patient is afflicted with that disease. No one single test, except presence of bacilli, can be considered pathognomonic.

I would warn against the type of hunch described by Dr. Victor Heiser in his "An American Doctor's Odyssey," in which he would attempt to diagnose pregnancy by the fact that a strand of hair on the left side of an immigrant woman's head hangs dull and lifeless over her left ear; or hernia by a man's gait; or valvular heart disease by ridged nails. To avoid pitfalls, one must keep in mind the most common things such as tuberculosis, bronchial asthma, bronchiectasis, pleural effusions, emphysema and bronchosnusitis. If careful examination excludes these, then the more uncommon conditions such as abscess, malignancy, syphilis, actinomycosis, dermoid cyst, etc., should be considered.

Clinical Examples

A boy of 18 (J. L.) came to see me March 26, 1936. His family and social history were irrelevant. He lived on a farm. Since the age of three he had had bronchitis, which became worse every winter. The only childhood disease was pertussis. During the last few winters when he acquired a cold he had profuse foul expectoration, which was considerable in amount on arising. In warm weather his symptoms subsided. He now complained of night sweats, loss of weight, and marked asthenia. He had been at absolute rest for a period of two months. The boy is 63¼" in height, weight 85¼ pounds; temperature 99.2; pulse 144; respirations 40; vital capacity 1100 cc.; blood pressure 106/88. He appeared extremely emaciated. Neurological examination and that of the eyes and ears were negative. There were caries of the teeth. His tonsils were absent. There were no thyroid symptoms. Width of the chest 23cm. and anteroposterior diameter of the chest 16 cm. Physical examination of the chest disclosed a multiplicity of findings. There was hyperresonance in parts and flatness in others with all types of rales. The fluoroscope showed presence of air and fluid in right pleural space. There was also an exudative mass in the opposite lung. The sedimentation test was very rapid going down to 31 mm. in one hour. Leukocyte count 16,500 with 92 per

cent polys, 6 per cent small lymphs and 2 per cent large lymphs. 1500 cc. of a foul smelling pus was removed. Sputum and pus carefully studied, including culture methods, showed haemolytic streptococci and an absence of tubercle bacilli. Whenever a great deal of pathology is found with clinical evidence of active bacterial infection in the lungs, careful repeated examinations of the sputum should show tubercle bacilli, and when these do not, one may safely exclude tuberculosis. In addition, this boy's history, leukocytosis and high poly count and absence of apical involvement should have been sufficient to exclude it. He was referred to a local hospital where stereoscopic films were made of his chest and laboratory studies done. It was concluded that he had advanced pulmonary tuberculosis and was to be discharged since nothing could be done for him as the condition was too far advanced for any type of treatment. In view of my examination, however, I insisted that the interpretation of the x-ray was wrong, especially in view of the fact that including animal inoculation, no tubercle bacilli could be found. The boy was referred to the surgical department of Temple University where Dr. W. Emory Burnett on June 24, 1936, did a rib resection for the right sided empyema and on July 22, on the left side. The patient improved considerably, but unfortunately the prolonged drainage of pus from the bronchial tree produced bronchiectasis in both lower lobes. Because of the probability that the boy would not be well unlelss this was eradicated, that he would continue to bring up foul expectoration and run the chance of the local pathology spreading to the other tissue, and that he would either die of extensive bronchiectasis with its associated pneumonitis, or possibly develop a metastatic brain abscess, lobectomy was considered. This was performed September 7th and although the boy is still at Temple Hospital under the observation of Drs. Burnett and Chevalier Jackson, the prospects now are for complete recovery. Laboratory studies of specimens removed disclosed no evidence of tuberculosis.

On December 8, 1933, a man (Wm. B. M.) was referred to me as to the advisability of artificial pneumothorax. He was supposed to have had pneumonia followed by an abscess and now he had night sweats, evening temperature, cough, and felt tired. Important points in the physical examination: impairment of the upper left and middle portion of the right lung, impure breathing central portion, impure breathing on the left side, slight enlargement of the heart with accentuation of the second pulmonic sound and soft systolic murmur at the apex. Examination of the sputum on three consecutive occasions was negative for tubercle bacilli. My diagnosis was mass at the base of the right lung, probably lung abscess. He was placed at rest for observation, gained four pounds in weight, and seemed improved. X-ray studies showed a primary growth in the middle lobe with suppurative lesion in the lower lobe. He was referred to Dr. Howard Lilienthal for pneumonectomy. Biopsy of material obtained by bronchoscopy showed squamous cell carcinoma. On February 19, 1934, the right lower lobe was removed. It showed multiple abscesses and no carcinoma. He died March 7, 1934, and the post mortem by Dr. S. Jarcho showed: "1. Squamous cell carcinoma in stump of right lower lobe bronchus with very slight infiltration and no metastases. 2. Acute fibrinopurulent pleuritis over right upper lobe and right middle lobe and diaphragm. 3. Small area of bronchopneumonia in right middle lobe. 4. Acute suppurative pneumonia in left upper lobe with many small abscesses. 5. Parietal thrombus on wall of left auricle at site of ligation of pulmonary vein. 6. Infarcts: spleen, kidney and liver."

The termination of this case was very sad. It showed, however, the futility of treating the patient as a tuberculous patient.

I was requested to express an opinion

about the advisability of sending a young man of 24 to a tuberculosis sanatorium, the diagnosis having been made in the State Clinic and having included stereoscopic x-ray studies. My examination showed considerable pathologic findings in the base of the lungs with repeated negative sputum, and definite suppuration of the paranasal sinuses. This led to a diagnosis of bronchosinusitis and possible bronchiectasis, which was confirmed by Dr. Chevalier Jackson of Philadelphia who after bronchoscopic drainage felt that the suppurative bronchitis would probably be relieved by subcutaneous injection of an autogenous vaccine made from the pus obtained from suction of the bronchial tree plus eradication of the sinus infection. Dr. Chevalier Jackson reported that the aspirated secretion showed no tubercle bacilli and one culture showed non-haemolytic staphylococcus, non hemolytic gray streptococcus, and pneumococcus. Dr. W. Edward Chamberlain of the Department of Radiology at Temple, reported in his conclusions, "The localization and type of bronchiectasis in this case is quite characteristic of that which is secondary to upper respiratory tract infection." The x-ray of the sinuses showed "Pansinusitis of the hyperplastic type with involvement of the lett maxillary antrum much greater than that of any of the other sinuses."

These are a few of the interesting cases that show the error of jumping at conclusions. It likewise disproves the idea that x-ray is an infallible method of diagnosis. X-ray is one of the most important links and methods used in the diagnosis of diseases of the chest. It is not "the be all and end all" of diagnosis. The personal element in diagnosis will never be displaced by mechanical instruments. One must also remember there are x-ray films and x-ray films; there are roentgenologists and roentgenologists.

Of course, the finding of tubercle bacilli is absolutely pathognomonic, but in the absence of tubercle bacilli, the x-ray plus hemoptosis or other clinical findings are extremely important. One must recall that hemoptosis does not always mean tuberculosis and many patients have spent years in sanatoria because of this one sign who at post mortem showed no evidence of pulmonary tuberculosis.

Where an occupation of an individual subjects him to inhalation of dust like rock dust, etc., pneumonokoniosis must be kept in mind. Silicosis is common in the Anthracite regions. Silicosis is not a preventor of pulmonary tuberculosis, any more than bronchial asthma, emphysema, or any infection of the respiratory tract. When two or more conditions of the chest exist, the difficulty of diagnosis is multiplied. The diagnosis of pulmonary tuberculosis having been made, one must decide whether the amount of involvement is far advanced, moderately advanced, or only minimal; whether it is unilateral or bilateral; whether with cavity formation or without cavity formation; whether associated with pleural thickening, etc.; whether the patient is mildly septic or is free of temperature or seriously ill. One must check on body weight; the presence or absence of infection elsewhere in the body; social status and psychological condition of patient and members of the family. A certain percentage of patients will not do well at home. These should be referred to a sanatorium. The sanatorium selected, whether it be free or pay, should be one that is well equipped. It should have an x-ray department with a competent roentgenologist to properly interpret films, and a laboratory. The institution must have either resident physicians or full time men. A tuberculosis sanatorium that depends only on visiting chiefs without any physician at the institution is unfit to care for such a patient. The institution must be prepared to give artificial pneumothorax or oleothorax where indicated. It would of course, be ideal if such an institution either had, or were in close affiliation with, a surgical department for the surgical care, for even when surgery is not indicated, such an institution

is always awake to the indications and needs for surgery, and is not inclined to procrastinate. If the patient for one of several reasons does not go to a sanatorium, then treatment depends on whether he is bed ridden or ambulatory; whether underweight, normal weight, or overweight; and whether the condition of his digestive apparatus is normal. So long as a patient has a continuous temperature, he should be kept at as near full-time rest as possible.

The patient must be told the truth in a cheerful and encouraging manner. Any attempt to treat a tuberculous patient under pretense that he has some other lung disease is unjustifiable. Rest is the great principle in the treatment of tuberculosis. Pneumothorax and thorocoplasty are merely specialized and highly improved forms of pulmonary rest. The amount of rest for the patient who does not have continuous fever depends on the activity of his disease, the presence or absence of complications, temperature curve, his sedimentation test, his vital capacity, his cardiac reserve, the question of fatigue, his muscular strength, and his surroundings.

Next to rest comes the question of fresh air. The old idea that "the colder the fresher" has been disproved. Fresh air, not of a frigid character and without undue exposure is advisable. The patient should be comfortable under all conditions.

Diet is an important feature. High caloric, high vitamin diet is advisable, overloading the stomach is inadvisable. Just as our treatment in diabetes today is to avoid carbohydrate substitutes and to give a diet as near as possible to that ordinarily allowed to non-diabetics, just so should we get away from the old-fashioned method of milk and eggs. Both milk and eggs are excellent foods and should constitute a part of the dietary regime, but should not be used to the exclusion of meat, fruit, vegetables, cereals, and essential forms of food. The patient, however, should avoid overly sweet foods, excessive pastries, and food known to disagree with him. The use of insulin to aid in the more rapid metabolism of carbohydrates so as to help put on body weight should be tried with the exceptionally thin individual who does not seem to be able to put on weight. At times the Gerson - Sauerbruch - Hermansdorfer regime works well. Because of the frequent association of diabetes and tuberculosis, it is wise to check not only the urine, but the blood sugar, and when an individual comes from a diabetic family, a sugar tolerance test should be made. In addition to the diet such accessory foods as cod liver oil and minerals, especially calcium, should be added.

Sunlight and heliotherapy: Time was when this was considered an essential in the treatment of tuberculosis. When I interned at the Philadelphia General Hospital, the walls and the ceilings of the tuberculosis building were entirely of glass. The fact that the glass filtered out a good deal of the ultra violet rays and that nudism was not yet in vogue, explains why the mortality rate at that time was not as high as it otherwise might have been. Sunlight and quartz light therapy is very beneficial to intestinal and bone tuberculosis, but direct exposure of the nude chest to the sun or quartz lamp is detrimental.

Drugs: For the tuberculosis, per se, I doubt if any drug has any definite value. Crisalbine and Sanocrysin, although I have had them on hand for many years, I have never used. Calcium gluconate intravenous, 10 cc. of a 10 per cent solution, seems to be of value especially in patients who have allergic phenonema. Iron and liver are of great value when anemia is present and frequently produce a great improvement in the well being of the individual if liberally used. The value of insulin has already been mentioned. Hydrochloric acid has unquestionably helped digestion, either when used alone or in combination with pepsin. Too frequently the cough of the tuberculous is treated with opiates. While morphine, heroin, codein, pantopon, dilaudid and the like have their place, they are usually

abused. The spasmodic cough is frequently relieved by inhaling five to ten drops of a mixture of equal parts of oil of eucalyptus, chloral, and menthol. The cough associated with gastric disturbances is sometimes relieved by dilute hydrocyanic acid in combination with ammonium hypophosphates. To this, if the patient has pain or is restless, phenobarbital or salicylates may be added and only if the pain is more or less severe, should one of the opiates be used. The patient who constantly receives codein or some other opiate is frequently depressed;—d e v e l o p s anorexia.

Any intercurrent or coexisting infection such as syphilis must of course receive due consideration. The question of tuberculin therapy will be taken up separately. Occasionally small transfusions of blood are useful. Autohemotherapy, using 20 to 30 cc. whole blood, has helped a number of cases.

Collapse Therapy: The remarkable improvement noted in patients who are fit for pneumothorax, stands out as one of the greatest achievements in the arrest, cure, and rehabilitation of the tuberculous. Unfortunately many individuals who could benefit by this simple collapse therapy come when the adhesions will not easily yield to mere increased intrapleural pressure. Where pneumolysis can be done, this is a distinctive help in collapse therapy. In unilateral tuberculosis where Jacobeus is not possible, I have tried contra-lateral pneumothorax, but the number of cases and my personal experience are totally insufficient to justify drawing conclusions. The complications of artificial pneumothorax are not many. Pleural effusions with aseptic empyemas are practically the only ones when pneumothorax is properly given. These complications are infrequent. When they do occur, aspiration and replacement with air, maintaining a negative pressure, is desirable. Increased amounts of rest are necessary in these cases. If pus develops in considerable amount and persists, one should give serious consideration to oleothorax. One must be certain that there is not a pleuro-pulmonary fistula. In my personal experience, oleothorax has worked well. I do not believe that in a paper of this sort, details as to technic and methods of giving pneumothorax need be given.

Phrenicotomy and phrenico-exeresis: I question the real value obtained from these simple operations. They are so simple and so easily performed and the definite rise of the diaphragm gives so much temporary relief that the operation will probably continue in favor. I believe that if an operation of this kind is to be done, the simple cutting of the nerve, rather than the complete removal of the nerve, should be performed.

Bilateral pneumothorax is feasible. This can be given to ambulatory cases and both sides may be partly collapsed at the same sitting.

Thoracoplasty, lobectomy, and other formidable surgical operations must always be kept in mind when other methods fail. Thick-walled unyielding cavities that will not yield to pneumothorax or cavities that will not close because adhesions prevent it, present problems for major surgery. The thoracic surgeon is becoming ever and ever more fitted by new technic, and when necessary, by more complete surgery, to bring about cures. He may at least arrest the disease where otherwise individuals would surely die, and before doing so would probably spread the disease to many others.

Tuberculin Therapy: I realize full well that in advocating tuberculin therapy, I am delving into a method that is not generally approved. My enthusiasm for it probably arose in working with Prof. Wilhelm Neumann in Vienna. Although I believe that he and the late Von Ruck of Asheville used it excessively, I feel there is a definite place for tuberculin therapy, not only in the extra-pulmonic lesions, but in certain selected pulmonary cases. The important thing is the method of administering the tuberculin. My personal method is to begin with one to one billion dilution, or what is known

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Some Practical Aids in the Diagnosis of Pulmonary Tuberculosis *

BY
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IT IS ALWAYS well to begin any diagnostic approach with a good history. I once heard an eminent chest specialist state that he could be reasonably assured after taking a thorough history whether or not the pulmonary disease from which the patient was suffering was tuberculous or non-tuberculous. A careful and well taken history not only unfolds the story and evolution of the patient's illness; not only depicts the chronological parade of significant events and developments; but it gives you the social, economic and moral background of that individual. This is so often important. The history itself is not infrequently highly suggestive if not diagnostic of the disorder with which you are confronted. Here are a few examples wherein the history serves in this way. An individual complaining of a slight cough of three months duration, of gradual loss of weight, of noticing a definite tired feeling or loss of pep, of having on one occasion coughed up a mouthful of blood, of having had an attack of pleurisy five years ago, an anal fistula two years ago which is still draining, and whose mother died from tuberculosis—such an individual is without question suffering from pulmonary tuberculosis and no further examination is required to make this diagnosis. Another patient has developed chills, fever, and sudden but copious expectoration of foul-smelling sputum ten days following an operation for removal of tonsils. This history is strongly suggestive of lung abcess. Again an individual having a cough with expectoration of large quantities of sputum over a period of many years with little impairment of the general health indicates that a chronic bronchial disease, such as, bronchiectasis, is the most likely disorder in this case. The very characteristic chill, stitch in the side, high fever and prostration of pneumonia is well known. Likewise the typical paroxysm of cough with suffusion of the face, vomiting and the characteristic whoop of whooping cough is a picture not easily to be forgotten. There is no need for more than passing mention of the picture so famaliar to us all seen in a severe asthmatic seizure. A productive cough with onset before the age of ten and after the age of forty years is most likely not due to tuberculosis. A productive cough for many years with little impairment of the health is a commonly recorded story in fuso-spirochetal disease. When cough, rapid decline in health, blood spitting, slight wheezing, and pain in the chest develops in an individual past middle life, cancer of the lung should be strongly considered as the condition confronting you.

Now I should like to give a few comments on two or three symptoms commonly encountered in pulmonary disease. First, cough: It is wise to view any cough persisting over a period of three months as due to tuberculosis until proved otherwise. Where severe coughing with profuse expectoration is due to tuberculosis, you may feel assured that the disease is in a far-advanced stage. While a slight hacking cough is most frequently noted in early tuberculosis, there is no cough characteristic of tuberculosis. In very early disease there is no cough and even in advanced disease cough may be slight or absent. A patient often denies a cough but admits clearing of the throat with expectoration. A morning cough with mucoid expectoration is fairly common among the excessive users of tobacco and dwellers in a city where carbon in the atmosphere abounds. The sputum in these cases is often brownish to black. Now another most important symptom is hemoptysis or the coughing and spitting

*An address before the Troupe County Medical Society, August, 1936.

out of blood. The occurance of this without an obvious explanation is presumptive evidence of the presence of pulmonary tuberculosis, and in over 90 per cent of the cases this diagnosis will be confirmed by subsequent examination. It must be kept in mind, however, that blood spitting may be encountered in other conditions, some of which are pneumonia, lung abcess, new growth, bronchiectasis and certain forms of heart disease. Finally, along with hemoptysis, another symptom highly suggestive of tuberculosis is pleurisy. Every case of pleurisy without an obvious explanation and particularly the wet variety—pleurisy with effusion—should also be considered presumptive evidence of a tuberculous infection and these individuals should be handled accordingly. It is my opinion after studying many cases of tuberculosis over a number of years, that a great many of the so-called attacks of pneumonia in the past were in reality attacks of pleurisy.

In performing the physical examination it is essential that it be done in quiet surroundings. A satisfactory examination of the chest can not be made otherwise. A doctor having offices in one of the modern office buildings should reserve an inside room for this purpose. Probably the most important point in making a satisfactory chest examination, and the one that is most often violated, is concentration. Failure of concentration is like "looking up," in golf. Thinking of the game of bridge that night or the fishing trip tomorrow while percussing or listening to the chest, precludes proper interpretation of these arts. I find it of practical value to orient the heart first. Also I find that a quick comparison of the two lungs before a meticulous examination is made proves to be most helpful. My readers probably do not have to be reminded of the importance of the expiratory cough. It is of such paramount importance, however, that I feel obliged to make mention of it. The fine crepitant rales of an early infiltration can be heard only in this manner. Generally speaking, I believe light percussion of greater value than heavy or medium, and would like to emphasize the importance of feeling the resistance to the fingers when percussing. Creditable percussion can be done by a deaf person for this reason. Fluid in the young patient is often overlooked because the characteristic absent or suppressed breath sounds are not present. The most valuable physical sign in these cases, and in fact most all cases, is the wooden flatness of the percussion note. I have observed a similar percussion note over an infiltrating carcinoma. It is a practical point, worth keeping in mind, that the fluid in patients under ten years of age is usually purulent. I believe the most valuable sign in detecting small areas of consolidation is the use of the whispered voice—traveling rapidly over the chest with the bell of the stethoscope.

No chest condition is thoroughly and completely studied without the use of x-ray films. Caution is advisable because of the danger of poor films. Poor films not only fail to reveal the trouble, but in themselves may be misleading. I believe a flat film should be studied in addition to the stereo films, as the latter have a tendency to minimize the findings. The information obtained from lateral views must not be overlooked. Tuberculous glands behind the heart are seen only on such films. With experience, considerable proficiency can be obtained with the fluoroscope. The fast screen that we have at the present time is a considerable additional advantage. The taking and studying of serial films particularly upon serial view boxes gives a running story of the case that is most graphic and illuminating.

The most practical and the most valuable laboratory examination is the examination of the sputum. The material is readily available; the process requires a short time to perform, calls for no elaborate equipment, and gives significant and tangible findings. Tubercle bacilli, fungi, fusiform organisms, blood, pus, and elastic fibers are the most significant findings looked for. A persistant absence of

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Manometry in the Conduct of Artificial Pneumothorax

BY
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WHEN SAUGMAN in 1906 introduced manometry into the practice of inducing artificial pneumothorax, he converted a previously unsafe procedure into a surgical operation whose risks could be reduced to a minimum. The earlier workers in the field of collapse therapy, notably Carlo Forlanini and John B. Murphy, were obliged to induce pneumothorax without benefit of this valuable technical assistance. It is more than a coincidence that pneumothorax therapy became more generally accepted after this time.

Unfortunately too little attention has been paid to the recording of intra-pleural pressures and to the information gained from studying them. The physiological principles and their application are relatively simple and need only a fairly brief discussion.

In the "potential" space existing between the visceral and parietal pleurae there is normally a tension which reflects the inherent elasticity of the lung tissue. Atmospheric air enters the bronchi, distends the lung and causes it to adhere closely to the chest wall; as the lung becomes distended, there is produced the natural reaction which is that of recoil of the distended elastic tissue of the pulmonary parenchyme. The chief factor responsible for the production of the intra-pleural pressure is therefore the interplay of the pulmonary distension and the elastic recoil of the lungs. Anything causing diminution of pulmonary elasticity, such as emphysema, will reduce the intra-pleural pressure; anything increasing the compression of the lung, such as atalectasis, will increase this intra-pleural pressure. During respiration, there is a cyclical variation in intra-pleural pressures. In inspiration, the muscular contraction causes the thorax to expand, more air is permitted to enter the lungs, and the bronchi are distended with air; therefore the atmospheric pressure in the bronchi is much greater than the pressure in the pleural space, and the intra-pleural pressure accordingly falls below that of the atmosphere. During expiration, the thorax contracts, air is forced out of the bronchial tubes, the elastic recoil of the lungs causes the pulmonary alveoli to collapse, and the pressure in the intra-pleural space approaches that of the atmosphere although it does not quite equal it. On most systems of registration, the pressure of the atmosphere is recorded as "neutral" or "zero"; therefore any pressure which falls below that of the atmosphere must be lower than zero or "negative," and any pressure above that of the atmosphere must be "positive". In this sense, a so-called "suction" or "negative" pressure in the thorax is only one below that of the atmosphere. During inspiration, the intra-pleural pressure is generally 6-10 cm. below that of the atmosphere or is "minus 10 to minus 6", while on expiration it is normally 4 to 7 cm. below that of the atmosphere or is "minus 4 to minus 7". When pressures are to be determined, the subject should always assume the same posture; changes in posture of the subject are associated with variations in the intra-pleural tensions.

To determine the intra-pleural pressure, there are needed a needle, a water manometer and rubber tubing to connect the needle to the manometer. These are incorporated into the modern pneumothorax apparatus as a rule. Generally the manometer consists of a U tube filled with water. Theoretically the bore of the manometer should be the same as that of the needle, but this is not feasible. The manometer tubing should be of 3-5 mm.

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inside diameter, and if a needle correspondingly as small as that were used, it would not register the fluctuations properly. So small a needle might be easily corroded or occluded by water from the sterilizer or by blood or tissue encountered in the puncture of the chest wall incidental to the performance of pneumothorax. Too large a needle would cause excessive traumatism to the chest wall. Most authorities insist on a needle of 17-20 gauge; in the Pneumothorax Clinic of Touro Infirmary, it is customary to employ a 19 gauge needle. The connecting rubber tubing should be as short as is practicable for the apparatus employed. If it is too long, slight changes in pressure will not be recorded on the water manometer quickly enough to be detected in the usual procedure.

As the needle is passed through the anaesthetized chest wall, there will be no fluctuations of the fluid in the manometer until the tip of the needle lies just outside the parietal pleura. Here there will be seen slight fluctuations about the atmospheric level (O), but these do not indicate that the needle has penetrated the pleura. This point is most important to bear in mind. As soon as the needle has penetrated the parietal pleura, there will be seen free fluctuations of the fluid in the manometer. Inasmuch as these free fluctuations constitute the sole assurance that the needle lies safely within the layers of the pleura, they must be definitely present before air is permitted to flow into the pleural sac. Such assurance is the only means known for avoiding the occurrence of air embolism and puncture of the lung, the two most formidable accidents of pneumothorax therapy.

The operator will notice that the fluctuations of the manometeric fluid cause displacement upward in one limb and downward in the other. Most manometers to-day are calibrated in terms of centimeters. It is important to record the entire displacement of fluid; therefore if only one limb of the manometer is observed for its fluctuations, the displacement on this side must be doubled to obtain the "true" intra-pleural pressure. Unless this is done universally, any discussion of intra-pleural pressures will require an explanation of the values obtained; i. e. whether the reading is for one limb or for the entire fluid displacement. Those not accustomed to using manometers will avoid confusion at first by reading the values on the limb of the manometer *not* attached to the needle inserted into the pleural cavity. On this limb, displacement of the fluid above the zero mark indicates positive pressures, while displacement below the zero mark indicates negative pressures.

It is advisable to record the pressures only on quiet respiration. After the needle has been securely inserted between the layers of the pleura, the heights of the columns on inspiration and on expiration should be determined. The air is then allowed to flow into the pleural cavity. It will be noticed that as air enters the pleural cavity, there will be a change of pressure because of pleural distension and pulmonary compression. If too much air is insufflated, these pressures will equal or exceed that of the atmosphere. When it is considered to-day that the tendency among pneumothorax workers is to induce a collapse of low-pressure levels, it becomes obvious that regulation of intra-pleural pressures by attention to manometry is most important.

At times, a free fluctuation of the fluid in the manometer cannot be obtained. If the characteristic snap has been appreciated, and the needle has been apparently passed through the parietal pleura, the absence of fluctuations should suggest three possibilities: The needle may be occluded (in which event the stylet should be used to cleanse it gently) or the tip of the needle may have passed through the visceral pleura into the parenchyme of the lung or there may be no free pleural space because of adhesive pleuritis. If no fluctuations can be obtained after the needle has been shown to be clear, the needle should be withdrawn and inserted in another site. If the patient has been

given previously some air, it will be possible to aspirate some form the pleural sac; if the patient has never been treated by pneumothorax before this, there will obviously not be such assistance. Occasionally minor fluctuations, as from minus 2 cm. to plus 2 cm., will be obtained when the tip of the needle lies within the substance of the lung itself. It is not wise to permit passage of air into the chest unless the possibilities of adherent pleuritis and lung perforation have been eliminated. In either event, it is wiser to elect another site for pneumothorax. It should always be borne in mind that some patients have never any free pleural space and are therefore unsuited for pneumothorax at any time.

Once a definite pneumothorax has been established, and there are no complications, a given amount of air at regular intervals will produce about the same change in intra-pleural pressures. If a patient receives 500 cc. air once a week and his intra-pleural pressures vary from minus 10 to minus 3 cm. before air is insufflated and minus 2 c. to 0 at the conclusion of the treatment, the same records should be obtained at each sitting. There will naturally be some slight variations from week to week, but if these variations are marked, the operator should think of the occurrence of complications. The intra-pleural pressure is a valuable guide on such occasions. If in such a patient as described above, the same starting pressure is obtained but only 300 cc. air suffice to bring the pressure to the level formerly reached after the insufflation of 500 cc. air, there is some encroachment on the pleural sac. Accumulation of fluid or the presence of adhesions are the most common causes. If fluid is present, it will be noted that before any air is injected, the pressure may be almost as high as it was at the completion of the last artificial pneumothorax. If after a small amount of air is injected, the pressure tends to rise abruptly, the needle is most probably within a pocket formed by adhesions. One is justified in suspecting accumulation of fluid, if a patient is able to maintain a fairly even degree of pulmonary collapse over a relatively long period of time without addition of air or if there is marked variation in fluctuations of the manometer with respiration. If the pressure is very high before air is permitted to enter the pleural sac, and there is obvious dyspnea, there is probably excessive mediastinal displacement because of a "high-tension" pneumothorax. Aspiration of air from the pleural sac is accompanied by relief of symptoms in such an event. If a patient has a spontaneous pneumothorax, the amount of air to be withdrawn at a time can be judged largely by the reduction in intra-pleural pressures achieved.

Bunta has properly compared the information afforded by the intelligent use of the manometer to that offered by the instrument panel of the aviator. The aviator is handicapped, but is not helpless, when he does not receive signals from the ground. In the same way, the pneumothorax operator prefers not to dispense with the use of the x-ray, but when this is not available he can conduct pulmonary collapse by noting the variations in the intra-pleural pressures and by interpreting them in light of the physiological principles applying to pneumothorax therapy.

Summary

1. The use of the water manometer has made induction of pneumothorax much safer.

2. Without obtaining free manometer fluctuations, the operator is not certain that the tip of the needle lies in the pleural sac.

3. The normal intra-pleural pressure varies from minus 10 to minus 6 cm. on inspiration and minus 7 to minus 4 cm. on expiration.

4. As air enters the pleural sac, the intra-pleural pressure slowly increases. If this increase does not occur, the tip of the needle has perforated the visceral

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Tobacco and Tuberculosis

BY
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Infection

THE USE of tobacco is so wide spread, and so many conflicting statements regarding its effects on health and disease may be heard, that a brief review of the existing knowledge of the relationship of tobacco and tuberculosis may be of interest to physicians caring for consumptives. Although the possibility of the transmission of tubercle bacilli in "spit tipped" cigars has been demonstrated, this constitutes more of an aesthetic than a hygienic factor, as it is unlikely that actual clinical infection and disease has been often produced in this manner. The transmission of the germs from one mouth to another in passing the "peace pipe" or otherwise sharing smoking utensils, as well as in lighting cigarettes for one another by taking a puff, may more often be incriminated.

The general carelessness so apt to be associated with the use of tobacco, especially in such matters as coughing and expectorating without regard to the aesthetic or hygienic sensitivities of one's neighbors may be particularly dangerous if the tobacco user happens also to have an open pulmonary tuberculosis, as the germladen expectoration may be scattered freely and endanger the health of others. This is especially true of tobacco chewers, as raw tobacco has been proved to support viable tubercle bacilli for weeks, but may also be the case with smokers, since the possible disinfecting action of the smoke is so superficial and transient that it cannot be expected to have any effect on the dangerous bacilli in the sputum.

Tuberculosis in the Trade

A high incidence of tuberculosis among workers in tobacco has been repeatedly reported, and some writers have attempted to show that the chronic irritation of the tobacco dust may be a factor in lowering the resistance of the people employed. In other places, however, no such excess of tuberculosis among tobacco workers has been found, and it appears probable that the conditions previously described were consequences of the crowded, dark, damp and dusty conditions under which the poorly paid employees, mainly cigar makers, were compelled to work in earlier years, rather than due to any specific effect of the tobacco itself. The fact that cigar making was for so long an occupation employing large numbers of persons on a piecework basis at sedentary work which could be readily learned and undertaken by individuals physically incapable of holding more strenuous manual jobs may account, moreover, for a tendency for individuals already tuberculous to drift into this vocation, and thus swell the apparent toll of the disease in this field.

With the introduction of machinery in tobacco manufacturing and the organization of the workers in this trade, conditions have changed from the sweat shops of a generation ago, and sanitary conditions among some of the newer cigarette factories have been describd so enthusiastically that it is unlikely that the white plague will continue to spread in this industry. Out among the neglected districts of many a "Tobacco Road," the high incidence of tuberculosis similarly reflects the poverty and ignorance of the poor tobacco growers, rather than any dangers inherent in the occupation.

Lowered Resistance

The effect of tobacco smoking on resistance to tuberculosis is difficult to evaluate. That certain dusts, more especially those containing silica, tend to lower the resistance of the body against previously arrested or later acquired tuberculosis has been generally observed. The dusts of vegetable origin, and particularly carbon dust, such as might be expected to be found in tobacco smoke, is more often considered to produce a relatively harmless anthracosis, which, although it may

predispose to bronchitis and emphysema, affords, if anything, a slightly increased resistance against tuberculosis. The chronic inflammation of the upper respiratory tract that so often accompanies smoking might also be expected, a priori, to lower resistance to the implantation of the infection in these tissues, but there is no proof available that this is true, or even that the reverse may not be the case, instead. Several studies have revealed a lower vital capacity among smokers, as compared with abstainers, but the differences are small, and in at least one investigation the reverse was found to be true.

Deleterious Effects

Although it may not be proved that smoking actually predisposes to infection of the lungs with tuberculosis, it seems that it may lead to more frequent localization of tuberculous involvement in the larynx. Not only do statistical investigations show a higher incidence of laryngeal lesions among the patients reporting that they use tobacco, but clinicians repeatedly report that patients recover from this complication more readily if they abstain from smoking. As similar improvement is reported following the "silence" or laryngeal rest treatment, it seems plausible to charge the deleterious effects here noted to the irritative factors in the smoke.

The acceleration of the pulse rate, frequent extrasystoles and accentuated sinus arrhythmia, hacking cough and hoarseness, and loss of weight, which so often result from tobacco smoking, may simulate or accentuate the symptoms of tuberculosis, even to the extent of obscuring the true diagnosis, whether or not they exert much influence upon the actual course of the disease in the average case. Well controlled quantitative studies of the effect of tobacco on the course of pulmonary tuberculosis are lacking, but the judgment of phthisiologists is almost unanimous that it can do no good, and may do harm, although it is too often impossible to prevail upon the patient to abandon the habit, even when its dangers are recognized and emphasized.

It has been stated that the discipline and self control required to follow the cure successfully is strengthened by strict abstinence and that those who continue to smoke are less apt to follow the other minutiae of the cure to a successful conclusion. Fire hazards and other considerations often underlie the regulations against smoking in many institutions, but intelligent cooperation is needed for their enforcement.

"Reading Time of Papers published in Diseases of The Chest — 5 to 15 minutes."

MANOMETRY IN THE CONDUCT OF ARTIFICIAL PNEUMOTHORAX—(Continued from page 20).

pleura and lies within the lung or a bronchus or there is excessive lability of the mediastinum. If it rises too rapidly, there is an accumulation of fluid or the tip of the needle is in a pocket formed by pleural adhesions.

5. The patient should always assume the same posture each time pneumothorax is performed.

6. The "true" reading: i. e. total displacement of fluid or double that in one limb, should always be recorded.

7. The needle should be of 17-20 gauge, the connecting rubber tubing as short as is practicable, and the manometer tube of 3-5 mm. inside diameter.

OFFICE TREATMENT OF PULMONARY TUBERCULOSIS—(Continued from page 15).

as the ninth dilution. I begin with 1/20 of 1 cc. of that, giving it once to twice a week, and if there are no local or systemic reactions, increasing the dosage by 1/20 cc. until 1 cc., then to 8th dilution and in same manner to 7th, etc., until the pure Koch's Old Tuberculin is used. If at any time, there is a local reaction without systemic signs, one goes back to 1/10 the strength that was last used. If there is a systemic reaction, one stops the tuberculin for several weeks, and after all signs are gone, begins with 1/100th the dose which produced such reaction. By local reaction, I mean merely at the site of injection. By systemic reaction, I mean either a reactivation at the focal point of the tuberculous involvement, or such systemic signs as fever, chills, sweats and the like. The injections are given intradermally and not subcutaneously. Used in this manner, I have never seen untoward results, and I have had what seemed like improvement in the condition of the patient. It takes approximately two to three years to finish such a course of treatment.

The patient should be taught to return to the office at regular intervals. Notation as to temperature rise, cough, expectoration, night sweats, the hours of rest, and the details of activity should be noted. There must always be cooperation between the patient and the doctor. While the patient should be kept cheerful he should not be permitted to neglect directions. By talking these things over with him; by examining sputum at regular intervals; by doing blood counts approximately once in six months; by taking vital capacity and sedimentation tests about once in two months, the patient feels that there is some reason why he is to return to the office and this will keep him more on the alert. Of course, patients receiving pneumothorax must come at the regular stated time. By close cooperation between the physician and the patient, better results are obtained and more arrested cases and cures are noted. Likewise, early symptoms of progression or complications of the disease are detected.

SOME PRACTICAL AIDS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS—(Cont. from p. 17).

tubercle bacilli in a case with profuse purulent expectoration comes near ruling out pulmonary tuberculosis. Animal inoculation is too expensive and the results too delayed to be a practical procedure. Culture of the sputum is on the increase but calls for trained workers and expensive equipment. I recently, in consultation, saw a patient with carcinoma of the lung which had been overlooked because yeast fungi were grown in pure culture from the sputum. This method, therefore, has its pit-falls. I consider cytological examination of fluids of only partial aid. The red cell sedimentation test needs no comments except to say that it is of definite value and growing in popularity.

Now for a few brief comments on some special procedures. Thoracentesis when

skillfully done is practically a painless procedure and should always be done where fluid or pus is suspected. It has been my experience that the so-called unresolved pneumonia is in most instances due to the presence of pus and the exploratory needle will reveal it. The injection into the bronchial tree of iodized oil is being done a great deal today; and the information afforded by this method is of untold value. Many a case of lung abcess, bronchiectasis, and neoplasm have been revealed by its use. It is well to mention here that this procedure has considerable therapeutic virtue in many cases of bronchial disease. What has been said of the iodized oil injections can also be said of bronchoscopy. When confronted with a puzzling or obscure chest condition or when dealing with a patient having profuse purulent expectoration, do not forget the bronchoscope.

In conclusion, may I emphasize again the importance and significance of the intra-cutaneous tuberculin or Mantoux test. A negative test in an adult is an extremely valuable aid in ruling out tuberculosis; and a positive test in the very young usually signifies the exposure to an open case of tuberculosis in the immediate environment. The tuberculin of choice is a purified protein derivative known as P. P. D. At the present time its cost is somewhat prohibitive; but let's hope that soon its universal use will standardize this valuable test the world over.

SEE BACK INSIDE COVER PAGE FOR SPECIAL SUBSCRIPTION OFFER.

MEDICAL ECONOMICS—(Continued from page 9).

This must be accepted with reservations, since many hospitals have isolated obstetrical wards, thereby lessening the chances of infection.

But we have the hospital complex. Any patient with flu, pneumonia, mumps, or what not, must be cared for in a hospital regardless of cost. The busy doctor is too busy, and his burdens must be made easy. Hence the mounting cost of medical attention.

What are we to do about it all? Whether we like it or not, socialized medicine exists in America today. Sixty-five per cent of hospital beds are owned and operated by the government. This includes Veterans Bureau hospitals, tuberculosis sanatoria, insane asylums, county hospitals, etc., operated by federal, state, county or municipal authorities. Add to this free dispensaries, diagnostic clinics, child welfare, and one is given a conception of how far the government has entered the practice of medicine. Private hospitals are forever in the red or closing their doors.

There are four methods of approach in attempting to reach a solution of a very pressing problem:

First, *laissez faire*, or let things remain as they are. This only invites disaster and should be eliminated by any thoughtful individual. Pursue this course and state medicine will be forced upon us.

Second, mass production. This offers a temporary way out through group clinics organized along commercial lines whereby the patient pays a stipulated amount each year to cover all types of treatment, including hospitalization for surgery and obstetrics. Many people in the low income brackets, together with others better able to pay, find this method a way out of the financial difficulties incident to illness.

Third, state medicine. This, I feel, is the best type of practice in a non-profit society, but I also feel that no capitalistic government has a right to legislate against any one group. If it is sound policy to legislate against doctors, then it is sound policy to legislate against grocers, clothiers and all types of individual business. I have no quarrel with state medicine per se, but I do object to practicing state medicine in a capitalist society.

Fourth, compulsory health insurance. This seems to me the most logical way out in our present system. But it must be compulsory for all people up to a certain income and must be administered by the federal government and not by the governments of forty-eight different states. The doctor is then paid a reasonable fee for services rendered and the patient has been given decent medical attention, without feeling that he or she has been an object of charity. The large class of unemployables which we have always with us must of necessity be cared for through funds derived from the federal government. Any society, if it continues to live, must recognize the fact that the unemployables, from whatever cause, are objects of government support. No one asked to be born, and if a certain percentage, either through lack of the necessary gray matter or through illness cannot take their place in society, then that society must make provision for them as it does now for the insane or misfits from any other cause.

Lest you raise a voice in protest, let me leave this quotation with you: "The physician's position in society has *never* been determined by the physician himself, but by the society he serves. He may oppose it, he may retard it, but he can never stop it."